IN THE CLAIMS:

1 1. (Canceled)

2 2. (Canceled)

1 3. (Canceled)

1 4. (Canceled)

1 5. (Canceled)

1 6. (Canceled)

1 7. (Canceled)

1 8. (Canceled)

1 9. (Canceled)

2 10. (Canceled)

11, (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

1 17. (Canceled)

1 18. (Canceled)

1 19. (Cancelled)

2 20. (Canceled)

3 21. (Canceled)

4 22. (Cancelled)

IN THE CLAIMS:

23. (Currently Amended) A vehicle collision avoidance system comprising:

a circumferentially rotating pulsed infrared laser beam scanner apparatus, wherein the scanner is emitting and receiving the reflected lasern beam signal over the 360° field of view, including a laser pulsed emitter and an infrared laser sensor for generating a first signal representative of an obstacle scanned, the laser pulsed emitter rotating circumferentially in a horizontal plane and a vertical plane simultaneously, the infrared laser sensor circumferentially rotating synchronously with the laser pulsed emitter in the horizontal plane and receiving a reflected laser beam signal from the obstacle scanned,;

a processing circuit coupled to the circumferentially rotating pulsed infrared laser beam scanner apparatus for processing the first signal and generating a plurality of signals;

a processor coupled to the processing circuit for processing the plurality of signals and generating a braking signal; and

a braking apparatus responsive to the braking signal.

24. (Canceled)

25. (Currently Amended) The vehicle collision avoidance system of claim 1, wherein the circumferentially rotating pulsed infrared laser beam scanner apparatus is operable to scan an object from 1.6m to 120m.

26. (Currently Amended) The vehicle collision avoidance system of claim 2, wherein the circumferentially rotating pulsed infrared laser beam scanner apparatus rotates in the horizontal plane at 48 revolutions per second and with a period of 20.83ms and in the vertical plane at 8 sectors per second and a period of 20.83ms.

27. (Currently Amended) The vehicle collision avoidance system of claim 1, wherein the circumferentially rotating pulsed infrared laser beam scanner apparatus emits a laser beam having 28.45W peak power, an average power of 142mW, a wavelength between 1µm [[1um]] and 1.550µm ~~m~~ excluding the region between 1.3µm ~~1.3um~~ and 1.4µm ~~1.4um~~, and preferably between 1.450µm and 1.550µm, a 1.0ns to 1.25ns pulse width, [[and]] a 10Mhz to 110Mhz repetition rate, and a 0.002 radian emitting pulsed laser beam divergent angle.

28. (Canceled)

29. (Currently Amended) A method of avoiding a vehicle collision comprising:

determining features of an obstacle using a circumferentially rotating pulsed infrared laser beam scanner apparatus, wherein the scanner is emitting and receiving the reflected laser beam signal over the 360° field of view,

including a circumferentially rotating laser pulsed emitter and a circumferentially rotating infrared laser sensor;

processing signals representative of the determined features; and

braking the vehicle in the event the processed signals indicate an imminent collision.

30. (Currently Amended) The method of avoiding a vehicle collision of claim 7, wherein the circumferentially rotating pulsed infrared laser beam scanner apparatus rotates in a horizontal plane and in a vertical plane simultaneously.

31. (Currently Amended) The method of avoiding a vehicle collision of claim 7, wherein the circumferentially rotating pulsed infrared laser beam scanner apparatus emits a laser beam having 28.45W peak power, an average power of 142mW, a wavelength between 1µm [[1um]] and 1.550µm ~~1.550um~~ excluding the region between 1.3µm [[1.3um]] and 1.4µm [[1.4um]], and preferably between 1.450µm and 1.550µm, a 1.0ns to 1.25ns pulse width, [[and]] 10Mhz to 110Mhz repetition rate, and a 0.002 radian emitting pulsed laser beam divergent angle.

32. (Canceled)

33, (Currently Amended) A method of avoiding a vehicle collision comprising:

circumferentially detecting ~~circumferential obstacles as~~ bodies proximate the vehicle;

obtaining data from a rotating pulsed infrared laser beam scanner apparatus including a time when the beam reaches a first edge of each body ~~the obstacle~~ and a time when the beam reaches a second edge of each body ~~the~~

34. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 11, further comprising determining a critical point at which an absolute value of da/dt approaches zero.~~ The method of avoiding a vehicle collision of claim 11, further comprising determining a critical point at which an absolute value of the derivative of each bodies acceleration with respect to time ~~da/dt~~ approaches zero.

35. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 12, wherein determining the relative distance and determining the time of collision are initiated at the critical point.~~ The method of avoiding a vehicle collision of claim 12, wherein determining the relative distance and determining the time of collision are initiated at the critical point.

36. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 11, further comprising determining a relative angular velocity of the obstacle.~~ The method of avoiding a vehicle collision of claim 11, further comprising determining a relative angular velocity of each body ~~the obstacle~~.

37. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 11, wherein determining the time of collision comprises computing a second order factor.~~ The method of avoiding a vehicle collision of claim 11, wherein determining the time of collision comprises computing a second order factor.

38. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 11, further comprising determining the bumpiness of a road surface.~~ The method of avoiding a vehicle collision of claim 11, further comprising determining the bumpiness of a road surface.

39. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 16, wherein determining the braking force to avoid a collision with the obstacle comprises determining a first braking force in a case where the time of collision is less than 1.5 seconds and a second braking force in a case where the~~

~~road is bumpy.~~ The method of avoiding a vehicle collision of claim 16, wherein determining the braking force to avoid a collision with each obstacle ~~the obstacle~~ comprises determining a first braking force in a case where the time of collision is less than 1.5 seconds and a second braking force in a case where the road is bumpy.

40. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 11, wherein determining the time of collision further comprises determining vertical and horizontal components.~~ The method of avoiding a vehicle collision of claim 11, wherein determining the time of collision further comprises determining vertical and horizontal components of each body.

41. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 11, further comprising determining a rate of approach of the vehicle and the obstacle.~~ The method of avoiding a vehicle collision of claim 11, further comprising determining a rate of approach of the vehicle and each body ~~the obstacle~~.

42. (Canceled)

43. (Currently Amended) ~~The method of avoiding a vehicle collision of claim 11, wherein the obtaining and determining steps are performed in a point to point vector processing manner.~~ The method of avoiding a vehicle collision of claim 11, wherein the obtaining and determining steps are performed in a point to point vector processing manner.

44. (Current Amended) The method of avoiding a vehicle collision of claim 11, further comprising using an analog circuit to process the time when the beam reaches the first edge of each body and the time when the beam reaches the second edge of each body, the relative distance from the scanner apparatus to each body, a relative angular velocity of each body, an acceleration of each body and a derivative of the acceleration.

CONCLUSION

All of the claims now remaining in the application are in condition for allowance and an indication to that effect is respectfully requested.

Respectfully submitted,

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